Modal Shift for an Environmental Lift
A taxonomy of modal shift policy in Europe

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OBJECTIVE AND BACKGROUND
OBJECTIVE

What potential does modal shift have to contribute to the fulfilment of the Swedish climate and environmental objectives? Including the desired reduction of CO2, NOx, SOx, PM2.5 and noise.

Which are the most effective policies to achieve a modal shift?

1. Which policy instruments have the goal to shift goods from road to less environmentally damaging modes?

2. Which policies would be most effective in a Swedish context?

3. Climate and environmental effects
Why care about a modal shift?

GHG-emissions from domestic Swedish goods transport

Kt CO2 ekv.

Millions of tonne kilometres (tkm)

Heavy trucks, CO2
Waterborne transport, CO2 (domestic)
Freight transport segments, CO2 target
Freight transport segments, tkm

Light trucks, CO2
Rail, CO2

Graph showing the emissions from different modes of transport over time.
Why care about a modal shift?

**Tonne kilometres and GHG-emissions by mode, 2017**

- **Heavy trucks**: 95.01%
- **Rail**: 26.59%
- **Waterborne transport (domestic)**: 8.69%

~ 41% of domestic tonne kilometres with Swedish heavy trucks are > 300km
MODAL SPLIT OVER TIME IN SWEDEN
(SHARE OF TONNE KILOMETERS)

<table>
<thead>
<tr>
<th>Year</th>
<th>Heavy trucks</th>
<th>Rail</th>
<th>Waterborne transport</th>
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<tbody>
<tr>
<td>2010</td>
<td>40%</td>
<td>20%</td>
<td>40%</td>
</tr>
<tr>
<td>2011</td>
<td>35%</td>
<td>25%</td>
<td>40%</td>
</tr>
<tr>
<td>2012</td>
<td>30%</td>
<td>30%</td>
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</tr>
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<td>2014</td>
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<td>40%</td>
</tr>
<tr>
<td>2015</td>
<td>15%</td>
<td>45%</td>
<td>40%</td>
</tr>
<tr>
<td>2016</td>
<td>10%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>2017</td>
<td>5%</td>
<td>55%</td>
<td>40%</td>
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WHAT HAVE WE DONE IN THE PROJECT SO FAR?

- Literature review
- Workshop
- Database
- Analysing policies
BARRIERS TO MODAL SHIFT
## Barriers to modal shift

<table>
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<tr>
<th>Rail</th>
<th>In general</th>
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<tr>
<td></td>
<td></td>
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<tr>
<td>On time!</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Poorly maintained infrastructure</td>
<td>Coordination</td>
</tr>
<tr>
<td>Capacity limits</td>
<td>Low demand-side interest</td>
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### Water

- Prices / Costs in ports
- Ineffectiveness in ports

- Ineffective regulation
- Tax and fee disincentives
- Lead times
MODE CHOICE

Most important factors when choosing mode:

- Costs / prices
- Reliability / Precision
- Flexibility
- Lead time

Other important factors:

- Simplicity
- Habits
- Environment

Other comments:

Generally freight forwarders or producers that purchase transport services.

You do not “choose” transport mode but rather request a transport service.

Firms do not reconsider their choices very often.
TAXONOMY OF POLICY INSTRUMENTS
Data collection

Past, present and planned policies in Europe
Several categories including:

- Type of policy
- Geographical level
- Targeted mode
- Results of policy
- Effectiveness of policy
Some examples of policy instruments

- **Administrative**
  - Legislations
  - Environmental classifications
  - Technical requirements

- **Economic**
  - Taxes
  - Subsidies

- **Informative**
  - Information campaigns
  - Eco-labelling

- **Research**
  - Technique testing
  - Development

- **Infrastructure**
  - Maintenance
  - Infrastructure investments
Majority EU-grants and local port infrastructure measures
Economic policy mostly grants

Many local port initiatives
Other policies usually national or regional (EU)

N = 178
Taxonomy of policy instruments

The majority of policies only target one mode.

Most policies target a shift to rail.
Taxonomy of policy instruments

Lack of quantified targets

Lack of evaluations

Available evaluations mainly concern economic policies at national or EU level

→ Key data unavailable

Available policy evaluations

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N = 178
Most evaluation reports do not classify the evaluated policy as successful/efficient. Among successful policies are different types of eco bonus systems and grants. Lack of applications common factor for failure.

Is the policy described as successful/efficient?

Succesrate of policy

N = 24
CONCLUSIONS AND FURTHER RESEARCH
CONCLUSIONS

Most policy instruments are economic, but all decision factors matter → Need for policy mix

Reliability, badly maintained infrastructure and capacity limits are main barriers for a modal shift to rail → Support to infrastructure investments.

High costs and ineffectiveness in ports are main barriers for a modal shift to waterborne transports. → Target the costs in ports.

Few ex post-analysis of policies and a lack of quantified targets.

Lack of interest is an important explanatory variable for failure.
FURTHER STUDIES

Continue analysis of effective policies
Environmental effects from policy scenarios
Recommendation for most effective policy mix
Thank you very much!

Any comments or questions?